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The Relationship between High Inflation and Output in Brazil from 1975 to 2002

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The Relationship between High Inflation and Output in Brazil from 1975 to 2002.

Abstract

The macroeconomic policies undertaken by Brazilian policymakers during the 60's, 70's, 80's, and 90's—namely high growth of money supply, huge budget deficits, and the excessive use of inflation tax—created an inflation crisis comparable to Germany's hyperinflationary period. Consequently, the effects of high inflation on different Brazilian economic variables have become interesting and challenging subjects to macroeconomists. This paper attempts to describe the effect of high inflation on output in Brazil between 1975 and 2002. By running a simple linear regression model, I find that, unlike many other studies, there is a positive relationship between inflation and output in Brazil during this period. More specifically, the results suggest that a 1% increase in average inflation produces a 0.0066% increase in output. This result is possible due to the Brazilian government's use of inflation to promote growth (Tobin Effect). Furthermore, this action by the government is responsible for the enormous income inequality found in Brazil.

1. Introduction

In the 1960's inflation began to rise in Brazil. Very soon it became the number one problem of the Brazilian economy. Every administration that took over the government employed a formula to try to eliminate inflation. Their policies included wage and price controls, constant changes in fiscal and monetary policies, fiscal reforms, fixed exchange rates, and changes in currency. However, the government's inability to balance its budget, fight corruption, and make a concerted effort to eradicate inflation resulted in enormous budget deficits, high growth of the money supply and, ultimately, hyperinflation throughout the 80's and 90's. What became clear was the government's abusive use of inflation tax to finance its spending. Ruge-Murcia (1999) describes the relationship between high inflation and the process of creating money to finance a budget deficit using data on Brazil between January 1980 and December 1989.

During these four decades of frustrated macroeconomic policy the standards of living of the Brazilian population worsened. Poverty multiplied and spread around urban centers, while the concentration of income on the hands of a minority put Brazil in the top of the list of countries with most cruel economic and social inequality in the world. These facts grasp the interest of macroeconomists, challenging them to study the effects of the Brazilian hyperinflation on different economic variables. For example, De Paula (1998) studies behavior changes of private banks due to high inflation, while Dole, et al (2000) describes the interaction between workers and firms under hyperinflation.

In this paper I study the effect of high inflation on output in Brazil from 1975 to 2002. By running a simple linear regression on Brazilian quarterly data I find that inflation positively affects output. Moreover, I find that a 1% increase in average

inflation causes a 0.0066% increase in output. The results suggest that the government used an inflation-fosters-growth mentality during the period in study, which significantly contributed to such a positive relationship.

This paper is organized as follows. Section 2 provides a description of the data on GDP and inflation used in this study. In section 3, I present the empirical work and discuss the results. Section 4 concludes the paper with some additional remarks. As a complementary part to this paper, section 5 provides the reader with a synopsis of Brazilian economic policy from 1964 to 2002 in appendix A and tables and graphs showing the data used in the study in appendix B.

2. Data Description

2.1 GDP

In this paper I used two different kinds of data on GDP. For analytical purpose, I used quarterly data on Real Gross Domestic Product for the period from 1975 to 2002. This data is originated from *IPEADATA* (http://www.ipeadata.gov.br). The reason for this choice is that yearly data would only provide me with 27 observations, which is a very small sample space for the regression to be significant. Instead, I used quarterly data, which multiplies the sample by four and allows for better estimations of the model. Table 2 provides this data, while figure 5 provides a graph of the same.

However, for descriptive purpose, I used throughout the text that appears in appendix A annual percentage change of Real Gross Domestic Product for the period from 1964 to 2002 to illustrate Brazilian economic performance. This data is originated from *APECAO XLII*. The explanation for this choice is to give the reader a numerical image of the Brazilian economic situation described in the text. Table 3 provides this data, while figure 6 provides a graph of the same.

2.2 Inflation

Similarly, I have also used two different types of data on Inflation. For the statistical model, I used quarterly data on the consumer price index for the period from 1975 to 2002. This data is originated from *IPEADATA* (http://www.ipeadata.gov.br). The source provides the monthly data throughout the period. I formed the quarterly data by adding together the monthly inflation rates of the months respective to each quarter. Once again, the reason for such choice is that the quarterly data multiplies the sample by

four, allowing for better estimations of the model. Table 4 provides this data, while figure 7 provides a graph of the same.

For descriptive purpose, I used throughout the text that appears in appendix A annual percentage change in consumer price index for the period from 1964 to 2002 to illustrate the Brazilian inflationary phenomenon. This data is originated from *Library of Congress* (between 1964 and 1996) and *IBGE* (between 1997 and 2002). In order to incorporate both sources I used the following proportion:

1997 Inflation rate = [(1996 IBGE rate) / (1996 Lib. Cong. rate)] x (1997 IBGE rate)

I incorporated both sources in order to have a complete set of data to cover the entire period of study. This data was also used to give the reader a numerical image of the Brazilian inflationary phenomenon described in the text of appendix A. Table 5 provides this data, while figure 8 provides a graph of the same.

2.3 Miscellaneous

Throughout section 3 of this paper I used graphs and a table of different economic variables to illustrate Brazilian economic performance during the period under study. Figure 1 shows Capital Formation from 1970 to 2002. Figure 2 shows Interest Rate and Inflation from 1975 to 2002. Figure 3 shows the Population Living Below Poverty Line from 1977 to 1999. Figure 4 shows the Gini Coefficient from 1977 to 1999. Figures 1, 3, and 4 originated from *IPEADATA* (http://www.ipeadata.gov.br). Also, figure 2 was made from data that originated from *IPEADATA* (http://www.ipeadata.gov.br). In addition, table 1 shows the top 10 countries with highest Gini Coefficients.

3. Empirical Work

In order to study the relationship between inflation and output in Brazil I used the following simple linear regression model:

$$log(\hat{y}) = \alpha + \beta[log(x_1)] + \gamma(x_2) + \varepsilon, \text{ where } \begin{cases} \hat{y} = GDP \\ x_1 = GDP_{t-1} \text{ (lag of GDP)} \\ x_2 = \text{rate of change in prices (inflation)} \end{cases}$$

This model relates the log of GDP to the log of lagged GDP (GDP_{t-1}) and the rate of change in prices (inflation). The above relation allows for the measurement of the magnitude of the relationship between inflation and output. The lagged of GDP serves as a proxy for all other variables affecting GDP. This relation is in line with the dictum of Rational Expectation Hypothesis. These specifications also allow us a better understanding of the effect of the effect of inflation on output. The table below shows the estimation results.

Table I

GDP is dependent variable: 1975 – 2002 sample, quarterly data

Variable	Coefficient	Standard errors	P Value
Intercept	+ 0.07069	0.02230	0.0020
Log[GDP_{t-1}]	+ 0.99843	0.00156	<0.0001
Inflation	+ 0.00660	0.00047498	<0.0001

The results in Table 1 show a strong positive relationship among the variables. This is evidenced by the positive and significant coefficient of the variables and the p-values. In addition, since this model relates the rate of change in GDP to the rate of

change in prices, the coefficient of the inflation variable also illustrates the magnitude of inflation's effect on output. It can be interpreted as follows: a 1% increase in inflation produces a 0.0066% increase in GDP. The corresponding p value (the smallest error level at which the null can be rejected) for this coefficient proves this result to be statistically significant (<0.0001), implying that this finding is robust. Furthermore, the R-Square (the proportional variation in the dependent variable that can be explained by the model) found in the model is extremely high (0.9997), suggesting that this model is successful in estimating such relationship.

Our results are not consistent a number of other studies for many highly developed countries. In developed countries high inflation produces uncertainty and leads to lower investment and production. Faria and Carneiro (2001) found that in the short run there exists a negative effect from high inflation on output, while Engelbrecht and Langley (2001) described that high rates of inflation are associated to negative per capita GDP growth rate. Andres and Hernando (1997) depicted a negative effect of inflation on per capita income, whereas in Braumann (2000), high inflation had a negative impact on output.

The explanation for a negative impact of rampant inflation on output relies on the costs of inflation. In the presence of high inflation, individuals rush their transactions so as to rid themselves of depreciating cash. Besides, knowing inflation erodes the value of money, individuals avoid this decrease in value by holding less money (shoeleather cost). Holding less money means more trips to the bank, time that could have been spent producing goods and services. In addition, other costs of rampant inflation arise from the misallocation of resources. For once, there is the cost of updating prices (menu cost),

since firms must change prices more often during a period of high inflation. This represents a misallocation of resources, as the same resources could have been used on investment on physical or human capital for the expansion of production. Furthermore, high inflation undermines the confidence of investors about the future course of monetary policy and reduces total factor productivity, worsening the long-run macroeconomic performance of the economy.

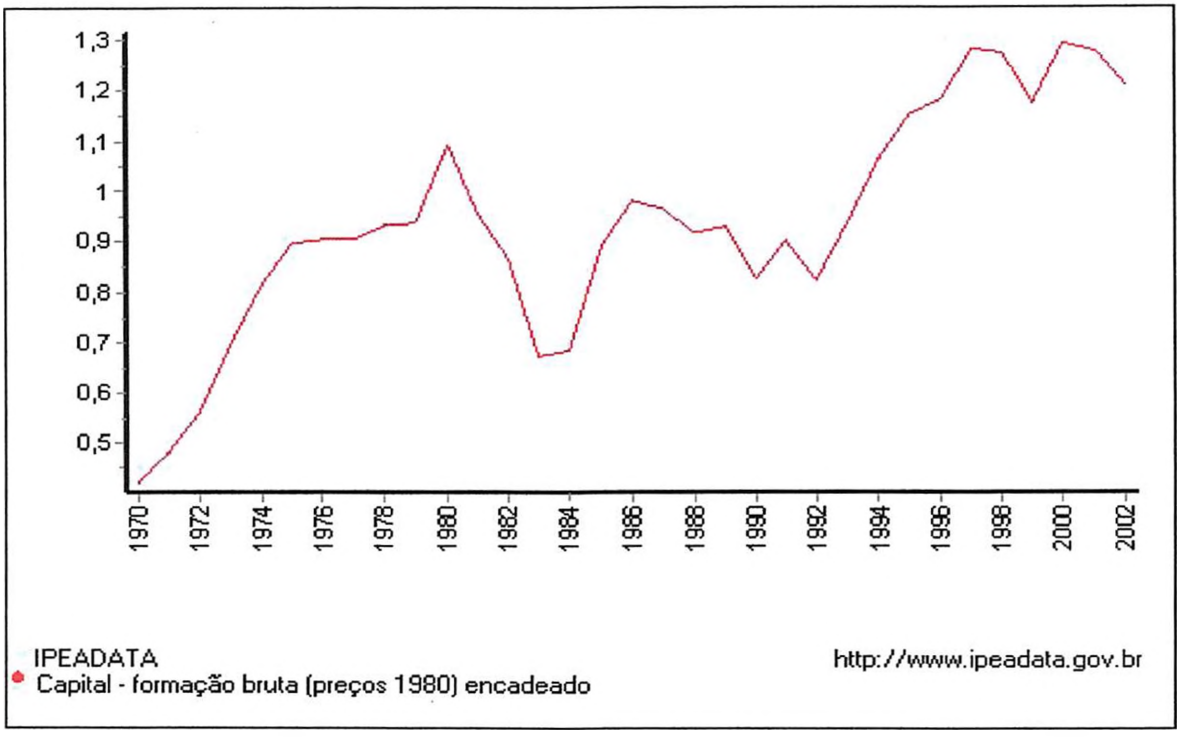
In the case of Brazil during the period in study, high inflation did not hinder GDP growth. In fact, the opposite is the case. The Brazilian government used inflation to promote growth. They relied on what's known as the Tobin Effect. As Tobin (1965) suggests, an increase in the inflation rate causes a greater holding of capital relative to money, increasing output and consumption. This study followed Mundell (1963), which argued that anticipated inflation is likely to raise the money interest rate by less than the rate of inflation itself. Ahmed and Rogers (1996) showed that in the long run the effect of inflation on output is positive ("Tobin type effect"). Policymakers strongly believed on this idea that inflation buys growth. Therefore, they took advantage of the commonly seen sneaky, short-lived increases in inflation to temporarily fool the economy into growing faster than it normally would.

Within a microeconomic scope, this mechanism also made sense for Brazilian policymakers. The Brazilian high inflation experience persisted for decades, creating a social phenomenon called inflationary culture. The population became accustomed to price increases and began to anticipate inflation. By anticipating inflation, individuals were able to work their ways around it. They understood that inflation automatically reduced people's wealth. Therefore, to accumulate the desired wealth, individuals held a

fraction of their income to meet their immediate needs and saved the rest, thus driving down the real interest rate. Petrucci (1999) found a positive effect of the money growth rate on capital, labor and output that gives support to the Tobin Effect. Greater saving means greater capital accumulation and thus faster output growth. As figure 1 illustrates, capital accumulation indeed followed an upward trend during the period in study.

Figure 1

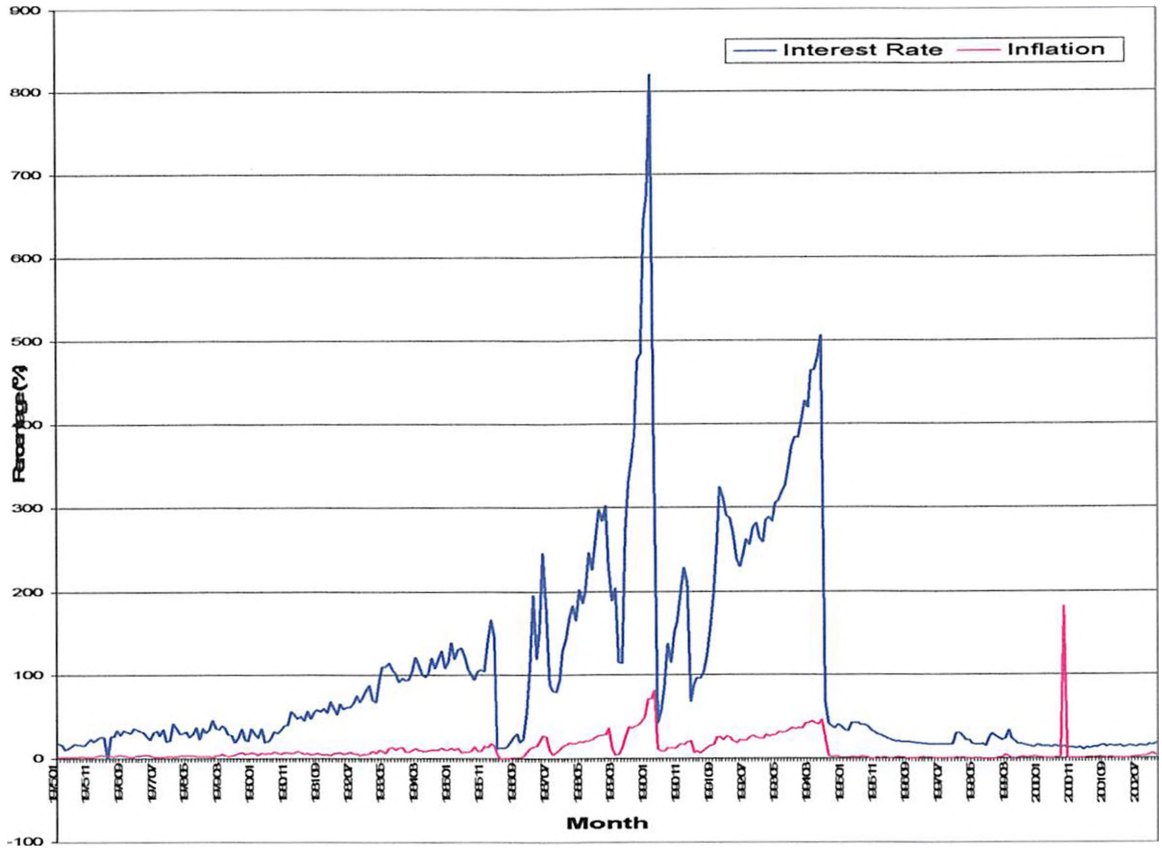
Capital Formation, Brazil – 1970 to 2002



However, the interest rate did not seem to fall when inflation increased like the Tobin Effect suggests. According to figure 2, interest rate appears to follow closely the unstable behavior of inflation.

Figure 2

Interest Rate and Inflation, Brazil – 1975 to 2002

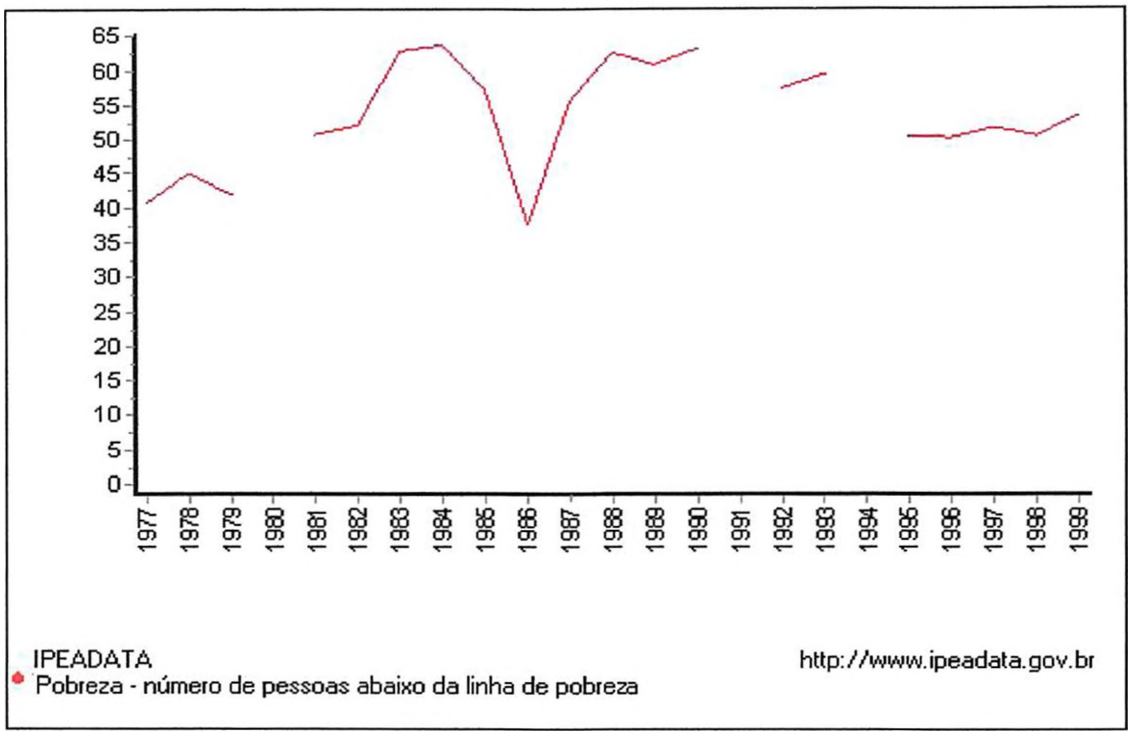


What, then, went wrong with the model? The answer is: you cannot save what you do not have. Those individuals who had enough wealth indeed increased their rate of savings. But they represented a minority. The vast majority of the Brazilian population did not have high enough levels of wealth to divide it up into money for immediate transactions and savings. Those, instead, watched prices go up and their money lose its purchasing power. Braumann (2001) shows that high inflation reduces real wages through a shift in relative prices, a mechanism that may contribute to rising poverty during periods of high inflation. This unfair system lasted for a long time; long enough to be responsible for the multiplication of poverty and the development of huge ghettos

around Brazilian urban centers. With an annual periodicity (despite missing the years of 1980, 1991, and 1994), figure 3 illustrates the number of people in Brazil that live below the poverty line. From 1977 to 1999 the average people living below the poverty line in Brazil was 53.27 million, reaching a low of 37.60 million people in 1986 and a high of 63.63 million people in 1984.

Figure 3

Population Living Below Poverty Line, Brazil – 1977 to 1999

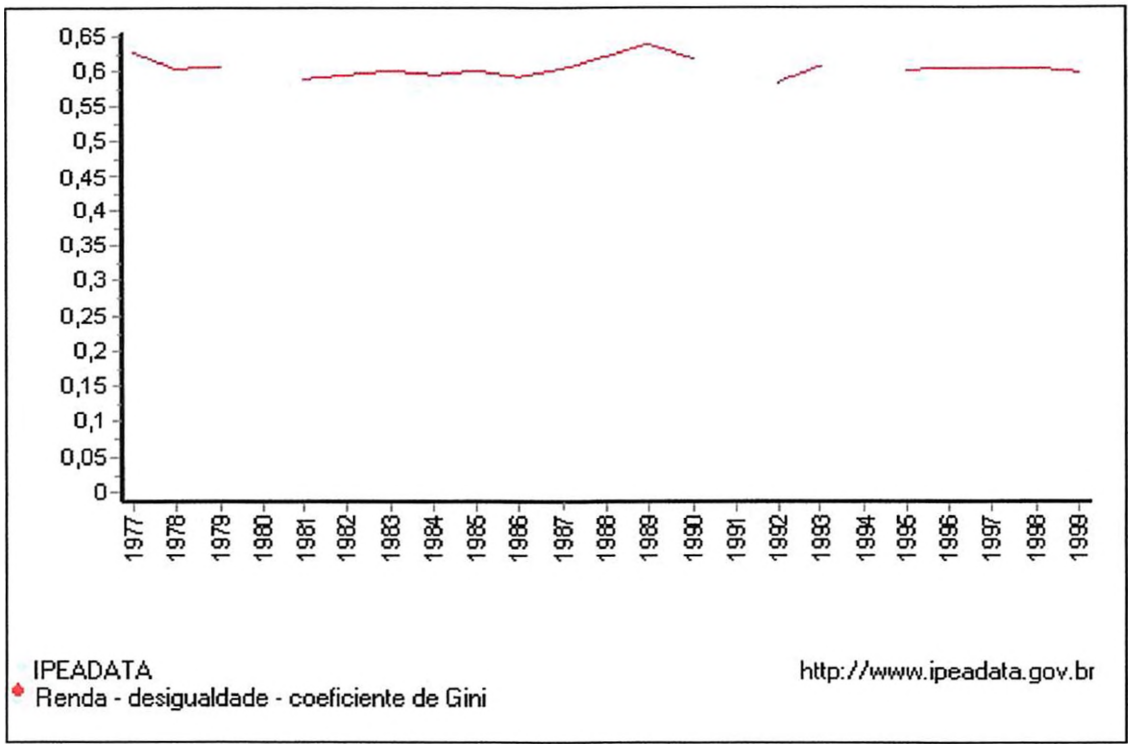


This horrendous stage of poverty that Brazil displays is the result of the concentration of income on the hands of a minority. Also displaying an annual periodicity (and missing the years of 1980, 1991, and 1994), figure 4 shows the Gini Coefficient for Brazil, which is a statistic used to measure how evenly income is distributed. The closer the Gini Coefficient is to 1.00 the more uneven is the income distribution. Figure 4 shows that Brazil has had a very high and steady level of economic

and social inequality, since its Gini Coefficient has averaged 0.603 and reached a low of 0.583 in 1992 and a high of 0.637 in 1989 during the period under study.

Figure 4

The Gini Coefficient, Brazil – 1977 to 1999



In fact, Brazil is the 5th worst country in the world when it comes to income distribution. This is shown in table 2 below

Table 2

Top 10 Countries with Highest Gini Coefficient

Rank	Country	Gini Coefficient
1.	Sierra Leone	63 (1989)
2.	Central African Republic	60 (1993)
3.	Nicaragua	59 (1998)
4.	Bolivia	59 (1997)
5.	Brazil	59 (1997)
6.	Honduras	59 (1997)
7.	South Africa	59 (1993 – 1994)
8.	Chile	58 (1996)
9.	Paraguay	58 (1998)
10.	Colombia	57 (1996)
Source: http://www.nationmaster.com		

Brazilian policymakers tried to maintain growth using inflation but, as policymakers usually do, they failed to consider the long term effects of that measure. Kasa (1999) advises that monetary authorities may come to believe that there is an exploitable relationship between inflation and output, even when no such relationship exists, which provides a reason why monetary policy may be subject to a persistent inflation bias. Also, Mallik and Chowdhury (2001) provide evidence of a long-run positive relationship between GDP growth rate and inflation, adding that moderate inflation is helpful to growth, but faster economic growth feeds back into inflation.

Unlike policymakers, economists, have the ability to study the long-term effects of policies before their implementation, since they do not depend on the political process. Economists, such as Gylfason and Herbertsson (2001) know that inflation in excess of 10-20 percent per year is generally detrimental to growth. They agree with Fisher et al (2002) who suggest that high inflation is associated with poor macroeconomic performance. In the case of Brazil, poor economic performance came in terms of the

Brazilian economy not performing to its potential between the 1960's and 1990's. The result, as known, is a four-decade turbulent period of low growth (including two recessionary periods) that seriously jeopardized Brazil's future economic health.

One other feature of this simple linear regression model that needs clarification is the intercept variable. The intercept term cannot be explained by the explanatory variables, since it represents the effects of the omitted variables and misspecifications of the model. In addition to the lagged values of GDP and inflation rate, current GDP is also determined by factors such as the level of investment, the magnitude of government spending and taxes, net exports, the stage of technological knowledge, and the quantity of physical capital, human capital, and natural resources. This task, however, is beyond the scope of this paper.

Additionally, the use of more sophisticated econometric techniques also could be used to extract better results from this study, such as using time series analysis, cointegration, and other techniques to study the joint properties of the series. This option is what I look forward to in the near future, as I dive deeper into the realm of economic analysis and prepare myself for post-graduate work.

4. Concluding Remarks

Using quarterly data on inflation and GDP, 1975 – 2002, this paper presents a positive relationship between high inflation and output. The findings contradict some current research that proposes a negative impact of high inflation on output. According to Barbosa, this outcome is a product of unbalanced economic development due to frequent mistaken policy decisions. Indeed, excessive government spending and recurring federal budget deficits significantly contributed to the economic instabilities of the period in study, namely high inflation and unemployment.

Balancing the budget overtime would alleviate the need for the Brazilian Central Bank to monetize the government's debt. Also, a responsible fiscal policy would allow for sensible monetary policy which, in turn, removes inflationary pressures that result from extreme money growth. These steps would definitely enhance the economy. However, some economists believe that prudent macroeconomic policies are only part of the answer. According to Acemoglu (2003), countries pursuing poor macroeconomic policies also have weak institutions, ineffective enforcement of property rights for investors, widespread corruption, and a high degree of political instability. This view not only applies to Brazil, but should be determinedly considered by policymakers if the country is to strive in its quest to becoming a modernized nation.

In order for Brazil to overcome the unfortunate experience of low growth paired with social inequality, strengthening institutions, enforcing property rights, and reducing corruption are only the beginning steps. Future governments will also have to develop policies to address several areas of the economy that have demonstrated weaknesses. Those include: better stabilization policies, greater investment in human capital,

improvement of the monetary regime to a more stable one that includes fiscal discipline, and stronger equity considerations that include the improvement of social infrastructures such as health care, education, public transportation systems, and housing for the poor. These recommendations can be seen as a framework for Brazilian policymakers to use to speed up the development process of the Brazilian economy.

5. Appendices

5.1 Appendix A

Synopsis of Brazilian economic policy, 1964 – 2002

During the 1960's the political and economic future of Brazil was very uncertain. High inflation, an enormous external debt, the constant devaluation of the currency, and the lack of parity between price and wage increases created a social tension never seen before in the Brazilian society. The immense regional economic disparities, the development of substantial poverty, and the massive migration of rural residents into industrialized cities contributed to the rapid spread of Communism during the Populist Republic.

Fearing the uncertainty of the country's future, the Military decided it was time for a change. In 1964, the Military overthrew President Joao Goulart and took control of government. Tired of being simply the judge of national politics, the Military became the absolute power. They instated a dictatorship-like regime that switched presidents every five years, with presidents being chosen among high army officials. At this point all decisions, including political and economic, were made by the Army.

The Military Regime (1964 – 1984)

The new military regime faced three basic problems with the economic sector: rampant inflation, economic stagnation due to lack of investments, and a deficit in the balance of payments. This situation kept the country in a sub-developed state, making it more vulnerable to the infiltration of communism. Promoting economic development became not only an issue of national security but also the biggest challenge of Mal. Castello Branco, the first president of Brazil under the military regime.

Castello Branco Administration (1964 to 1967):

The Castello Branco administration had two priorities: fighting inflation and attracting foreign investments. In order to fight inflation (83.9% in 1964), the new administration restricted credit, reduced the government deficit (US$3 billion in 1964), eliminated subsidies to gas, paper, wheat, and rent, increased taxes and tariffs over public services, and promoted a freeze in all salaries. To stimulate the entry of foreign capital, the Castello administration improved the conditions for profit by abolishing a law against the remittance of profits abroad and reduced taxes over profits for foreign companies who re-invested in production or imported machinery considered of national interest.

The actions taken by the Castello administration contributed to the low increase in GDP (2.4% in 1965), proven by the increase in the number of bankruptcies and the decrease in worker's purchasing power (due to the wage freeze). The reliance on foreign capital created a dependence on multinational corporations by the Brazilian economy. Those corporations started to associate themselves to, and absorb, Brazilian companies, beginning a process of internationalization of the economy. Good examples of this process are VEMAG S.A., absorbed by Volkswagen, and Banco Lar Brasileiro absorbed by Chase Manhattan.

Most important, this administration was characterized by the beginning of intense government intervention on internal and external economic relations. This was evident in the greater participation of military officials in national companies and in the board of trustees of multinational corporations, a trend that did not diminish in future administrations under the military regime.

Costa E Silva Administration (1967 to 1969):

As the second president during the military regime, Mal. Costa E Silva tried to correct the negative effects of the economic policy from the prior administration and provide conditions for solid economic growth. The new economic team gave the private sector conditions to develop by stimulating investments, giving incentives to the export sector to expand Brazil's external commerce, and investing heavily in health and education to supply urban and industrial centers with workers with a minimum of professional capacity.

Government participation in the economy increased during this administration. The involvement of state-owned companies in national production was amplified. The Brazilian middle class was especially targeted, as they benefited from the growing demand for labor in the services sector, extended internal credit, and an expanded national housing system by the government. These measures increased the middle classes' purchasing power, enabling them to buy cars, houses, and house appliances. The economic policy of this administration laid down the bases for the "Brazilian Miracle."

Médici Administration (1969 to 1974)

Therefore, when Emilio Garrastazu Medici became president in 1969, he not only had an economy technically ready to grow, but he also had the experience of watching previous administrations try to solve the country's economic problems. Due to the failure of previous administrations to eliminate inflation, the Médici administration chose to institutionalize it (keeping it around 20% annually). The government began to control inflation by using a process of automatic monetary correction[1]. This process affected

[1] The process of automatic monetary correction consisted of the government correcting wages and investments by the inflation rate of the previous month.

Brazilians in different ways. The wages of lower sectors of the Brazilian society were kept below the cost of living. The wages of higher sectors of the society, however, increased. They took advantage of the fact that companies began to hire high-skilled labor, such as managers and specialized technicians. Consequently, the middle and higher classes increased demand for durable goods, food, expensive liquor, luxurious cloth, and so on.

This great desire to consume stimulated the industry to resume its economic growth. Besides, companies benefited from the liberal policy of credit, the low wages earned by blue-collar workers, the opening of international commerce, and the ease to obtain loans abroad. Brazil began to export not only raw materials and semi-industrialized products, but also industrialized products such as canned meat, concentrated and dehydrated fruit juice, soluble coffee, clothing, televisions, and radios. This six-year period (1968 to 1974), characterized by accelerated growth (10.72% average GDP growth) and low inflation (20.94% average inflation rate), was named the "Brazilian Economic Miracle."

The "Brazilian Economic Miracle" had, however, negative long-term effects in the country. First, this period was responsible for the income concentration by the higher layers of society. The lower sector of the society, who now had jobs and benefited from new lines of credit, was seduced by society's appeal to consume. The result was a cycle of progressive indebtedness by the population in order to buy televisions, radios, cars, and other goods. Second, this concentration of income became concentration of capital. Small producers and businesspeople were sacrificed by excessive taxation and the government's price control system, while bigger companies producing for exportation

benefited from tax incentives. Eventually, bigger companies absorbed the small firms, resulting in concentration of capital. Another result of the "Brazilian Economic Miracle" was the rapid expansion of Brazil's external debt, which increased from US$4.4 billion in 1969 to US$17.1 billion in 1974 (Dominguez 361), as it was necessary to obtain greater amounts of foreign capital, factors of production (technology), and raw materials (crude oil).

Geisel Administration (1974 to 1979)

When Ernesto Geisel took over the presidency in 1974 the "Brazilian Economic Miracle" appeared to be over. The country could no longer maintain high rates of growth paired with low rates of inflation, as the expansion that occurred during the "Brazilian Miracle" went beyond the capacity of the market for factors of production. Transportation, raw materials, labor, and basic food items became scarce, while the supply of public services such as water, electricity, and telephones became deficient in face of the great demand. To solve this problem, the Geisel administration contracted loans from abroad, imported the products that were missing in the Brazilian market, broadened exports by penetrating new markets, and substituted imports.

It is important to mention that in 1973 the world market was affected by a generalized crisis in international finances and the War in the Middle East. Imported crude oil suffered an incredible price increase, which affected Brazil tremendously, as the country's economic model was based on the automobile industry and road transportation. Despite the poor economic situation abroad, the administration took several loans to pay for imports, resume economic development, and execute the program of import

substitution. This model of economic expansion deteriorated the country's international accounts, increasing the external debt to US$49,9 billion (Dominguez 362).

The government's economic policy was accompanied by the expansion of industry, commerce, banks, and the ever-growing consumption by the higher layers of society. Trying to contain this tendency, the government reduced spending, increased the price of imports considered superfluous, mandated a salary compression, liberated interest rates charged by banks for loans to companies, increased the price of gas, and closed gas stations on weekends and holidays. However, none of these measures worked as expected. The inflation rate became even higher (85.7% in 1978) due to the oil crisis and the increases in the price of rice, beans, corn, potatoes, onions, and tapioca. The Brazilian Miracle was definitely over and the country appeared to be heading into a recession.

Figueiredo Administration (1979 to 1985)

The economic conditions could not be worse when Joao Baptista Figueiredo became president. In 1979 occurred the second shock in the oil market, followed by the increase in international interest rates. The new administration tried to execute a program of economic austerity in order to adjust Brazil's economy to the global crisis. Measures to slow down economic activity were taken, including the reduction of fiscal incentives to exports; the reduction of government spending; and an increase in investment in the extraction of oil in order to decrease imports. The economic slowdown program lasted only six months. Under a lot of pressure, the government changed its economic team, reinstated its previous economic policy of growth, and revoked all measures focusing on economic slowdown, making economic growth its main objective again.

The expansionary policy brought difficulties to obtain loans, which forced the government to adopt a series of restrictive measures. By 1981 the country went into a deep recession, illustrated by the steep decline in economic activity (GDP fell 4.3%) and the increase in unemployment (7.9% in 1981). Inflation skyrocketed (109.9% in 1981) while wages remained unchanged, decreasing the purchasing power of the Brazilian middle class. The recession greatly affected the state-owned companies, as the government decreased investment on them to cut spending.

The tough economic times forced the government to ask the International Monetary Fund (IMF) for help. The IMF agreed to guarantee Brazil's credibility abroad so that the country could get loans and attract investments. However, Brazil had to follow a program of financial and economic stability, which included the following conditions: large cuts in spending, an increase in exports, and the compression of wages. The Brazilian economy started being "tutored" by the IMF.

The biggest contribution made by the Figueiredo administration came in the field of politics. Recognizing that the military regime had weakened due to its inability to strengthen the Brazilian society and develop the country's economy, this administration gave birth to the process of national re-democratization. Several measures were taken during the five years of the Figueiredo administration in order to turn Brazil back into a democracy. Finally, on January 15th, 1985, the new president of Brazil was elected. Brazil entered a new phase in its history: The New Republic.

The New Republic (1985 – present)

At the end of the military regime, the Brazilian economy showed confusing signs. The 1981-83 recession seemed to be over by the end of 1984. However, inflation

(220.6% in 1984) jeopardized the economy by corroding the purchasing power of workers and creating a big hole in the public accounts. During the New Republic, inflation became the great problem of Brazil's economy. In order to confront inflation, the government created successive "economic packages," but yearly inflation rates were still high. This situation created a social phenomenon called "inflationary culture." The population became accustomed to price increases and consumed without any type of planning.

Sarney Administration (1985 to 1990)

When Jose Sarney took over, the country was stuck in a vicious financial cycle. That is, entrepreneurs preferred to invest their profits in financial markets, rather than back in production. This created a lack of investments that only worsened the country's producing capability. In order to fight off inflation, promote better income distribution, and restart to expand economically, the Sarney administration created the Cruzado Plan.

The Cruzado Plan (February of 1986)

Implemented on February 28, 1986, the Cruzado Plan adopted the following measures:

1. Switch of currencies from Cruzeiro (Cr$) to Cruzado (Cz$). The government mainly cut three zeros off of the old currency, using the following proportion: 1 Cruzado is equal to 1,000 Cruzeiros [Cz$1.00 = Cr$1,000.00];
2. Complete freeze of all prices, fares, services, and wages for a year;
3. A wage increase of 8% for workers in general and 15% for the minimum-wage, in addition to future readjustments that would be made automatically (wage trigger) every time inflation added up to 20%, and;
4. Extinction of the monetary correction. From this point on, wages and investments were no longer corrected by the inflation rate of the previous month.

The price-freeze and the wage increase created an exaggerated wave of consumption: savings accounts were emptied out, while sales reached a maximum. Consequently, companies increased working hours and labor, and enlarged their production capacity. The capital invested in financial markets was transferred to the stock market. It was the beginning of the much-waited economic growth after a major recession.

Four months later, however, the Cruzado Plan started to fail. Many products disappeared from the market, as the industry could not keep up with demand. Entrepreneurs complained they were taken by surprise and that their prices were out of line. Many products were reintroduced with different packaging to justify price increases. In November of 1986, the government launched the Cruzado II Plan in order to readjust the economy.

The Cruzado II Plan basically cancelled the price freeze and restored monetary correction. Tariffs for mail, telephones, electricity, and the prices of fuel, cigarettes, liquor, and medicine increased considerably. The government also suspended payment of the interest rates related to the external debt (this way, the country did not have to send billions of dollars abroad every year). As prices went up, the wage trigger went off several times. However, since wages could not accompany inflation, people's purchasing power decreased. Consequently, sales plummeted and many companies, especially small and of medium size, broke. Without a solution to inflation, which closed 1986 at 142.3%, the Sarney administration switched its economic team.

The new economic team launched on June 16th, 1987 the Bresser Plan. This plan decreed: a 90-day freeze on prices, wages, and rents; the extinction of the wage trigger;

the creation of a mechanism to adjust prices and salaries every 3 months based on the average inflation of the previous 3 months; a small devaluation of the Cruzado in relation to the dollar; and a decrease in government spending.

The result of these measures was, at first, positive: inflation fell while sales had a small increase, and the level of employment stabilized. However, the country did not believe in the effectiveness of the new plan and soon the situation reversed itself: prices went back up, the population's purchasing power fell, and the government began repaying the interest rates owed due to the pressure by foreign creditors. Inflation reached 224.8% in 1987 and GDP only grew by3.5%. On December of 1987, the government had no other choice than switching its economic team once again.

The new economic team spent the year of 1988 trying to normalize the country's economic situation. The result, however, did not show progress: inflation reached 684.5% and GDP fell 0.1%. As an alternative, the government launched a new plan on January 15th, 1989 called The Summer Plan. The Summer Plan's measures included: a new price and wage freeze; the substitution of the Cruzado (Cz$) for the New Cruzado (NCz$), cutting three zeros off of the old currency and using the proportion 1 New Cruzado is equal to 1,000 Cruzados [NCz$1.00 = Cz$1,000.00]; the extinction of monetary correction and creation of a new mechanism for monthly wage adjustment, based on the inflation of the previous month; and the increase in interest rates to inhibit consumption and the formation of inventory.

The Summer Plan did not take long to fail. Abusive price readjustments helped inflation skyrocket. Investors changed all their funds into financial assets such as gold, dollars, stocks, and overnights, while prices started being announced in dollars. The

increasing fear of hyperinflation (which reached 1,320%) made 1989 a year of economic terror.

Collor Administration (1990 to 1992)

The expectations towards the newly elected administration were very high. By the new president's request, the country decreed a holiday for banks, closing them for two days. With closed banks, President Fernando Collor de Mello announced his plan to eliminate inflation.

The Brazil Plan or the Collor I Plan (March of 1990)

The Collor I Plan was composed of several measures, which included:

1. The return of Cruzeiro (Cr$) as national currency without change in value;
2. Blockage for 18 months of all bank accounts above NCz$50,000.00;
3. Partial freeze of prices and wages;
4. Opening of the economy to foreign investments and gradual reduction of taxes on imports;
5. Adoption of floating exchange rates;
6. Increase in taxes and tariffs and creation of a tax over financial transactions;
7. Administrative reform and reduction of government spending;
8. Creation of a program to privatize state-owned companies, and;
9. Reduction to a minimum of state intervention in the economy.

The blockage of all accounts shocked the economy. Technically, the country was leveled: everyone who had money in banks could only use NCz$50,000.00. The price and wage freezes, however, loosened as soon as May came. Employers and employees were allowed to negotiate contracts, but the wage trigger was prohibited. Inflation seemed under control (inflation fell from 224.90% in the first quarter of 1990 to 29.43% in the second quarter of 1990), but recession was a threat to society

again. Strikes, reduction of working hours, and dismissals contributed to a decrease in GDP (GDP fell by 4.4% in 1990). Besides, the government could not reduce spending, which contributed to the poor performance of the economy.

In an attempt to improve the economy, the Collor administration launched on January 31st, 1991 the Collor II Plan. The Collor II Plan adopted the following measures: the end of operations "overnight"; an increase in the tax over financial transactions and of public fares; a price and wage freezes; the readjustment of rents based on salary variations, and; a new reduction of taxes on imports.

The new plan did not produce significant results. Despite a fall in inflation (414.7% in 1991), unemployment increased (4.15% in 1991), companies went bankrupt, and industrial production, as well as economic activity and profits, decreased (GDP only increased by 1% in 1991). Several products were authorized to have prices readjusted and, as wages did not increase accordingly, workers saw their purchasing power corrode again. Poverty multiplied and spread around urban centers in the form of huge ghettos. The concentration of income on the hands of a minority put Brazil in the top of the list of countries with most cruel economic and social inequality in the world.

Besides his failure with the economy, President Collor's credibility was also affected by accusations of corruption is his administration. These accusations were investigated and a big corruption system was found involving President Collor, his close advisor, his secretary, and a few other politicians. In a process that took more than a year, Collor was impeached and Itamar Franco, the vice-president, took over the Presidency.

Franco Administration (1992 to 1995)

Fighting off government deficit was the objective of the Franco administration. Several measures were adopted to meet this objective, including policies to combat tax evasions and contract defaults, the expansion of privatization of state-owned companies, cut in costs throughout government, and salary cutbacks. In December of 1993 Fernando Henrique Cardoso, Minister of the Treasure Department, sent to Congress a group of economic, financial, and fiscal measures to prepare the economy for the implementation of the Real Plan in the following year.

The Real Plan (July of 1994)

Contrary to the previous economic plans, the Real Plan was not a package of measures to shock the economy in a day. The plan was preceded by stages of preparation, which gave the economy the possibility to accommodate and the government the chance to balance its accounts. In this sense, the Real Plan introduced the following measures:

1. Creation of a Social Fund of Emergency (FSE), which keeps 15% of the revenue from all taxes and federal contributions. With this mechanism, the government was able to guarantee resources without the need to emit currency;
2. Creation of the Unit of Real Value (URV), a daily index tied to the dollar that began measuring the present inflation (and no longer the past inflation). The URV was used to correct federal taxes and public fares;
3. Conversion of all wages to URV using an average of the 4 previous months. In addition, they could only be readjusted after 12 months.
4. Voluntary conversion of all prices to URV, and;
5. Transformation of URV into national currency, Real (R$), starting July 1st, 1994.

The effects of the Real Plan were immediately felt, as the inflation rate plummeted (from 2,406.8% in 1994 to 14.8% in 1995). The commerce attracted buyers

by accepting pre-dated checks and credit cards. The freeze of public fares (electricity, telephone, and mail), fuel, and important food items decreased the cost of living of those with lower income. There was an explosion in consumption. The ease of importing brought into the country many foreign products such as cars, appliances, food items, and some luxuries. The evaluation of the Real Plan after its first year was positive and the population supported the plan. This public sentiment was reflected in the Presidential elections of 1994, in which Fernando Henrique Cardoso, father of the Real Plan, was elected President of Brazil.

Cardoso Administration (1995 to 2002)

The new administration brought in reforms they considered essential to modernize the country, stabilize the economy, and resume economic growth. The most important changes included the breakdown of monopoly over petroleum and telecommunications, and alteration in the definition of national company, in order to welcome foreign capital. During this administration Mercosul—a free-trade area between Brazil, Argentina, Paraguay, and Uruguay—was implemented. The president also gave continuity to the Real Plan by promoting a few adjustments to the economy, such as increasing interest rates to cool off internal demand, and the devaluation of the Real to stimulate exports and balance the Trade Balance.

With the Real Plan and the control over the currency exchange, the government controlled inflation at very low levels (2.62% in 1998). However, there were signs of recession (GDP rose by only 0.2% in 1998), such as a decrease in consumption and massive layoffs, which resulted in high unemployment (6.32% in 1998) in the industrial

and agricultural sectors. Also, international dependency helped increase the external debt.

During the 1998 Asian Crisis, the government tried to save the Real and the escape of investments by increasing interest rates and by getting help from the IMF. The country contracted a US$ 40 billion loan and was forced to take measures, such as the devaluation of the Real, an increase in government revenue, and a decrease in government spending, which decreased economic activity. From that point on, the administration tried different measures to keep inflation low, but that came with the price of low economic growth. By 2002 inflation was once again becoming a problem (14.71%), mainly as a result of expectations, as the Presidential elections' poll pointed to a loss of the government's candidate to a leftist union leader, member of the Worker's Party.

5.2 Appendix B

Table 2

Quarterly Real Gross Domestic Product (RGDP), 1975 - 2002

Quarter	GDP	Quarter	GDP	Quarter	GDP
1975.1	0.000000079616	1984.3	0.000036367	1994.1	18881.6267
1975.2	0.000000095948	1984.4	0.000049718	1994.2	66458.8108
1975.3	0.00000010009	1985.1	0.0001	1994.3	128495.3868
1975.4	0.00000010599	1985.2	0.0001	1994.4	135368.8548
1976.1	0.00000011911	1985.3	0.0001	1995.1	143063.7107
1976.2	0.00000014618	1985.4	0.0002	1995.2	155012.9519
1976.3	0.00000015941	1986.1	0.0003	1995.3	166058.5240
1976.4	0.00000016946	1986.2	0.0003	1995.4	182056.3304
1977.1	0.00000018582	1986.3	0.0004	1996.1	170503.8368
1977.2	0.00000023436	1986.4	0.0004	1996.2	189621.0214
1977.3	0.00000023668	1987.1	0.0005	1996.3	203395.5504
1977.4	0.00000024968	1987.2	0.0009	1996.4	215366.3184
1978.1	0.00000026112	1987.3	0.0012	1997.1	192912.3453
1978.2	0.00000032409	1987.4	0.0016	1997.2	212193.9891
1978.3	0.00000035359	1988.1	0.0025	1997.3	222703.6578
1978.4	0.00000037656	1988.2	0.0045	1997.4	242933.0418
1979.1	0.00000040630	1988.3	0.0082	1998.1	210605.7343
1979.2	0.00000050793	1988.4	0.0157	1998.2	233103.8582
1979.3	0.00000057332	1989.1	0.0281	1998.3	233974.0969
1979.4	0.00000068017	1989.2	0.0431	1998.4	236504.1875
1980.1	0.00000084453	1989.3	0.1021	1999.1	221628.8614
1980.2	0.0000010832	1989.4	0.2747	1999.2	247581.6956
1980.3	0.0000013115	1990.1	1.4179	1999.3	241182.2048
1980.4	0.0000015478	1990.2	2.2431	1999.4	263453.2042
1981.1	0.0000017564	1990.3	3.0525	2000.1	250866.3657
1981.2	0.0000022198	1990.4	4.8353	2000.2	271619.4524
1981.3	0.0000024894	1991.1	6.9815	2000.3	284896.3058
1981.4	0.0000027258	1991.2	10.6985	2000.4	293872.9541
1982.1	0.0000033456	1991.3	15.4224	2001.1	280473.8204
1982.2	0.0000044121	1991.4	27.1835	2001.2	295488.4797
1982.3	0.0000051870	1992.1	49.0106	2001.3	303346.5847
1982.4	0.0000056864	1992.2	91.1975	2001.4	320751.4792
1983.1	0.0000060570	1992.3	173.5820	2002.1	295848.2780
1983.2	0.0000085931	1992.4	327.1687	2002.2	324115.7860
1983.3	0.000011704	1993.1	666.9203	2002.3	337220.2600
1983.4	0.000015510	1993.2	1465.1312	2002.4	364306.1730
1984.1	0.000019395	1993.3	3568.5997		
1984.2	0.000027663	1993.4	8396.4631		

Source: IPEADATA (http://www.ipeadata.gov.br)

Figure 5

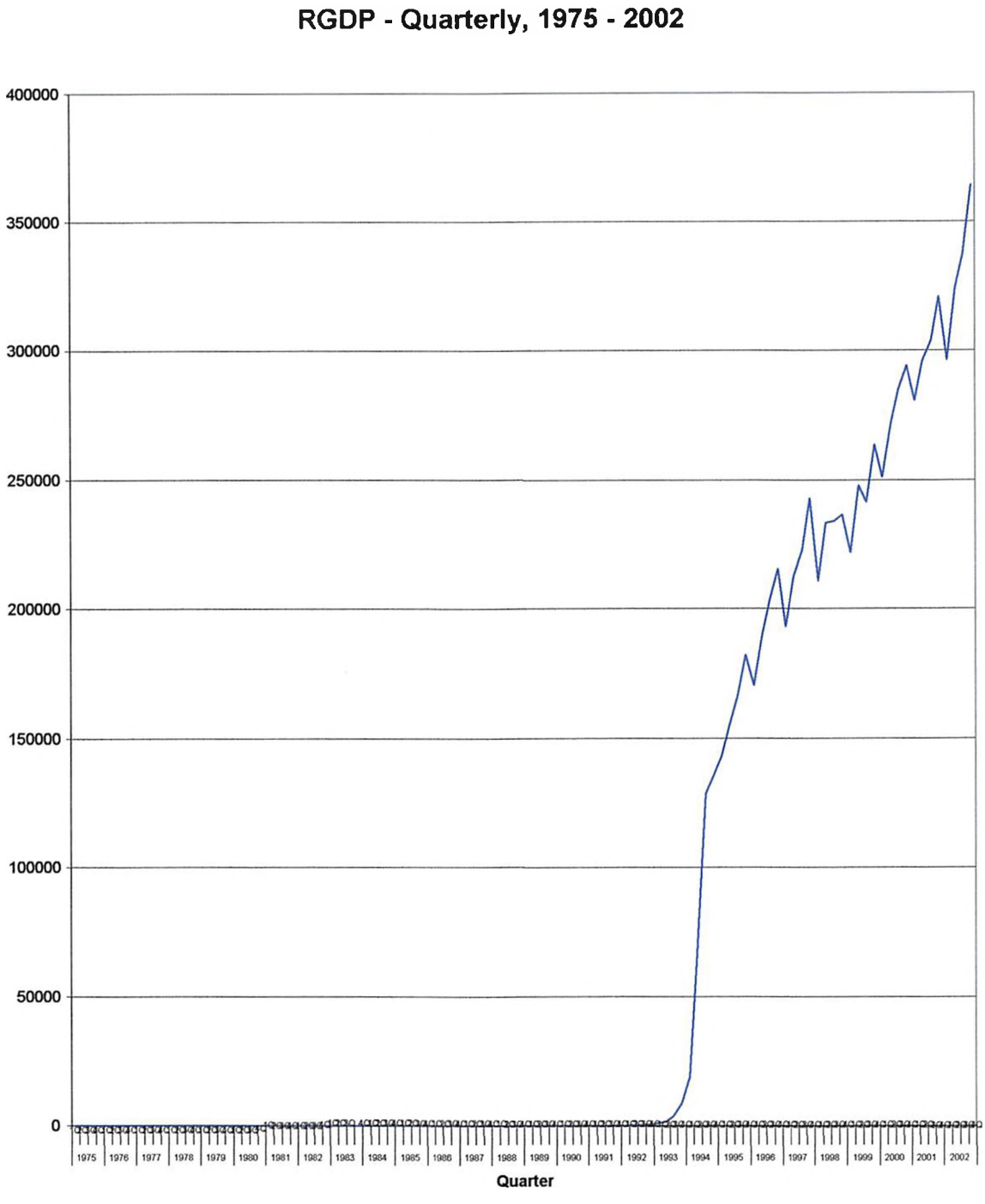

RGDP - Quarterly, 1975 - 2002
400000
350000
300000
250000
200000
150000
100000
50000
0
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
Quarter

Table 3

Gross Domestic Product (GDP), 1964 – 2002
(Real GDP index – base: 1980 = 100)

Year	GDP	Annual % Change			Year	GDP	Annual % Change
1964	28.9	3.4%			1984	98.8	5.4%
1965	29.6	2.4%			1985	106.5	7.8%
1966	31.6	6.7%			1986	114.5	7.5%
1967	32.9	4.2%			1987	118.6	3.5%
1968	36.1	9.8%			1988	118.5	-0.1%
1969	39.6	9.5%			1989	122.2	3.2%
1970	43.7	10.4%			1990	116.8	-4.4%
1971	48.7	11.3%			1991	117.4	1.0%
1972	54.5	11.9%			1992	116.8	0.5%
1973	62.0	14.0%			1993	122.5	4.9%
1974	67.1	8.2%			1994	129.7	5.9%
1975	70.6	5.2%			1995	135.2	4.2%
1976	78.0	10.3%			1996	139.0	2.7%
1977	81.7	4.9%			1997	143.8	3.3%
1978	85.7	5.0%			1998	142.4	0.2%
1979	91.6	6.8%			1999	143.6	0.8%
1980	100.0	9.2%			2000	149.6	4.2%
1981	95.8	-4.3%			2001	160.1	1.5%
1982	96.5	0.8%			2002	178.6	-
1983	93.7	-2.9%					

Source: APEC (Promoting Association of Economic Studies), *APECAO XLII*, [Rio de Janeiro, 2003]. (Primary source: Brazilian Institute of Geography and Statistics (IBGE).

Figure 6

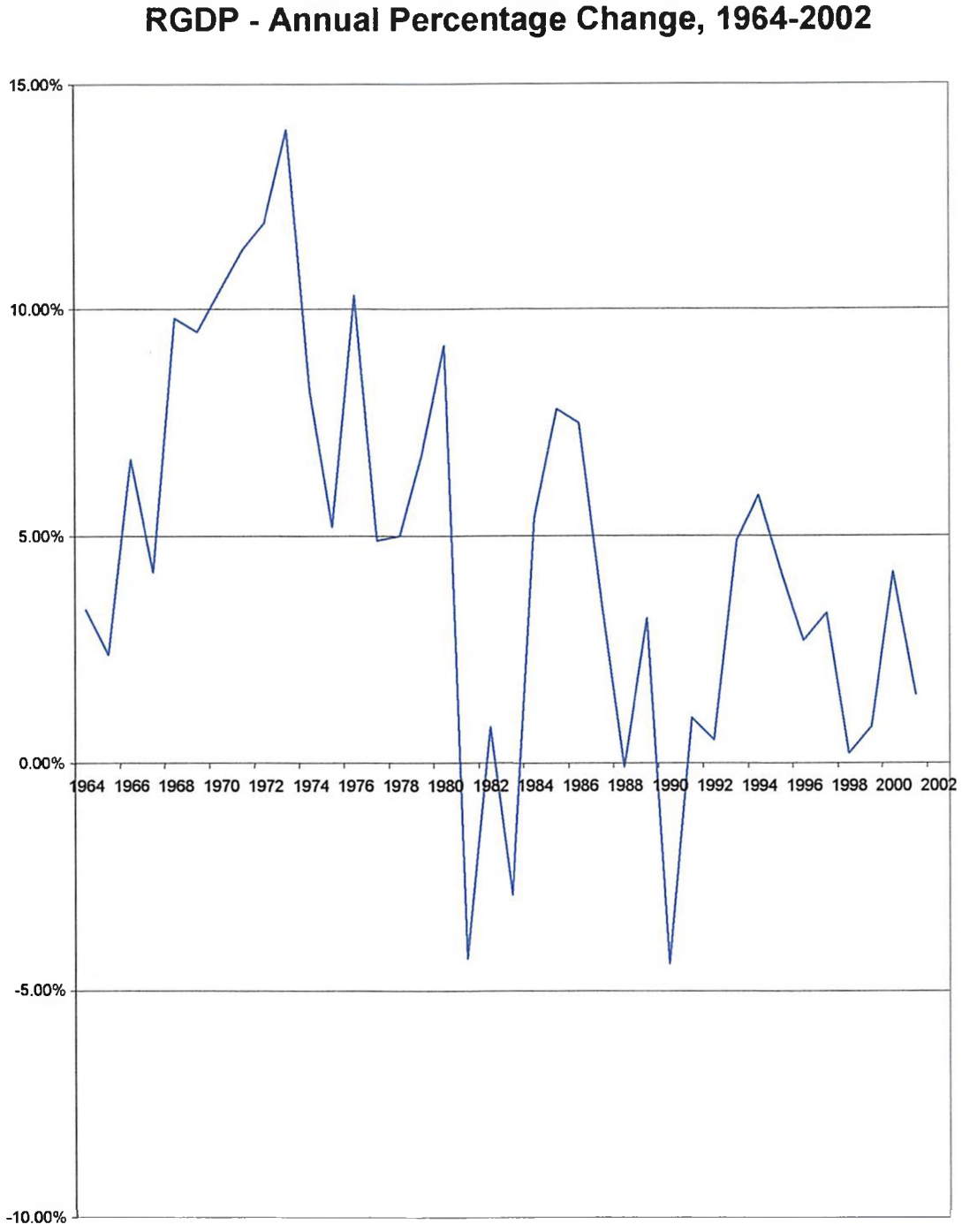

RGDP - Annual Percentage Change, 1964-2002
15.00%
10.00%
5.00%
0.00%
-5.00%
-10.00%
1964 1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002

Table 4

Quarterly Inflation Rate, 1975 - 2002

Quarter	Inflation		Quarter	Inflation		Quarter	Inflation
1975.1	6.07%		1984.3	31.45%		1994.1	129.43%
1975.2	6.14%		1984.4	32.99%		1994.2	129.99%
1975.3	7.21%		1985.1	35.51%		1994.3	29.60%
1975.4	6.58%		1985.2	22.84%		1994.4	5.59%
1976.1	10.93%		1985.3	32.05%		1995.1	4.32%
1976.2	9.84%		1985.4	37.20%		1995.2	5.32%
1976.3	11.34%		1986.1	38.29%		1995.3	2.45%
1976.4	6.56%		1986.2	0.27%		1995.4	1.83%
1977.1	11.06%		1986.3	3.05%		1996.1	2.77%
1977.2	2.46%		1986.4	11.41%		1996.2	3.60%
1977.3	5.14%		1987.1	41.15%		1996.3	1.22%
1977.4	7.46%		1987.2	73.54%		1996.4	1.38%
1978.1	9.35%		1987.3	21.85%		1997.1	3.16%
1978.2	10.20%		1987.4	41.51%		1997.2	1.59%
1978.3	8.04%		1988.1	54.95%		1997.3	0.64%
1978.4	7.14%		1988.2	60.67%		1997.4	1.86%
1979.1	13.20%		1988.3	70.19%		1998.1	1.13%
1979.2	9.56%		1988.4	84.44%		1998.2	0.38%
1979.3	10.19%		1989.1	52.59%		1998.3	-0.57%
1979.4	18.12%		1989.2	44.69%		1998.4	0.77%
1980.1	17.01%		1989.3	113.28%		1999.1	7.57%
1980.2	17.97%		1989.4	133.36%		1999.2	0.71%
1980.3	20.65%		1990.1	224.90%		1999.3	4.51%
1980.4	21.09%		1990.2	29.43%		1999.4	5.65%
1981.1	22.41%		1990.3	37.62%		2000.1	1.39%
1981.2	16.13%		1990.4	48.07%		2000.2	1.73%
1981.3	16.88%		1991.1	48.29%		2000.3	4.77%
1981.4	13.46%		1991.2	25.13%		2000.4	1.52%
1982.1	20.37%		1991.3	44.51%		2001.1	1.63%
1982.2	19.47%		1991.4	73.75%		2001.2	3.03%
1982.3	15.52%		1992.1	72.33%		2001.3	2.90%
1982.4	15.92%		1992.2	62.41%		2001.4	2.39%
1983.1	25.66%		1992.3	74.60%		2002.1	0.48%
1983.2	28.21%		1992.4	72.86%		2002.2	3.55%
1983.3	36.21%		1993.1	83.05%		2002.3	7.05%
1983.4	29.25%		1993.2	91.20%		2002.4	12.75%
1984.1	32.02%		1993.3	102.48%			
1984.2	27.05%		1993.4	108.32%			

Source: IPEADATA (www.ipeadata.gov.br)

Figure 7

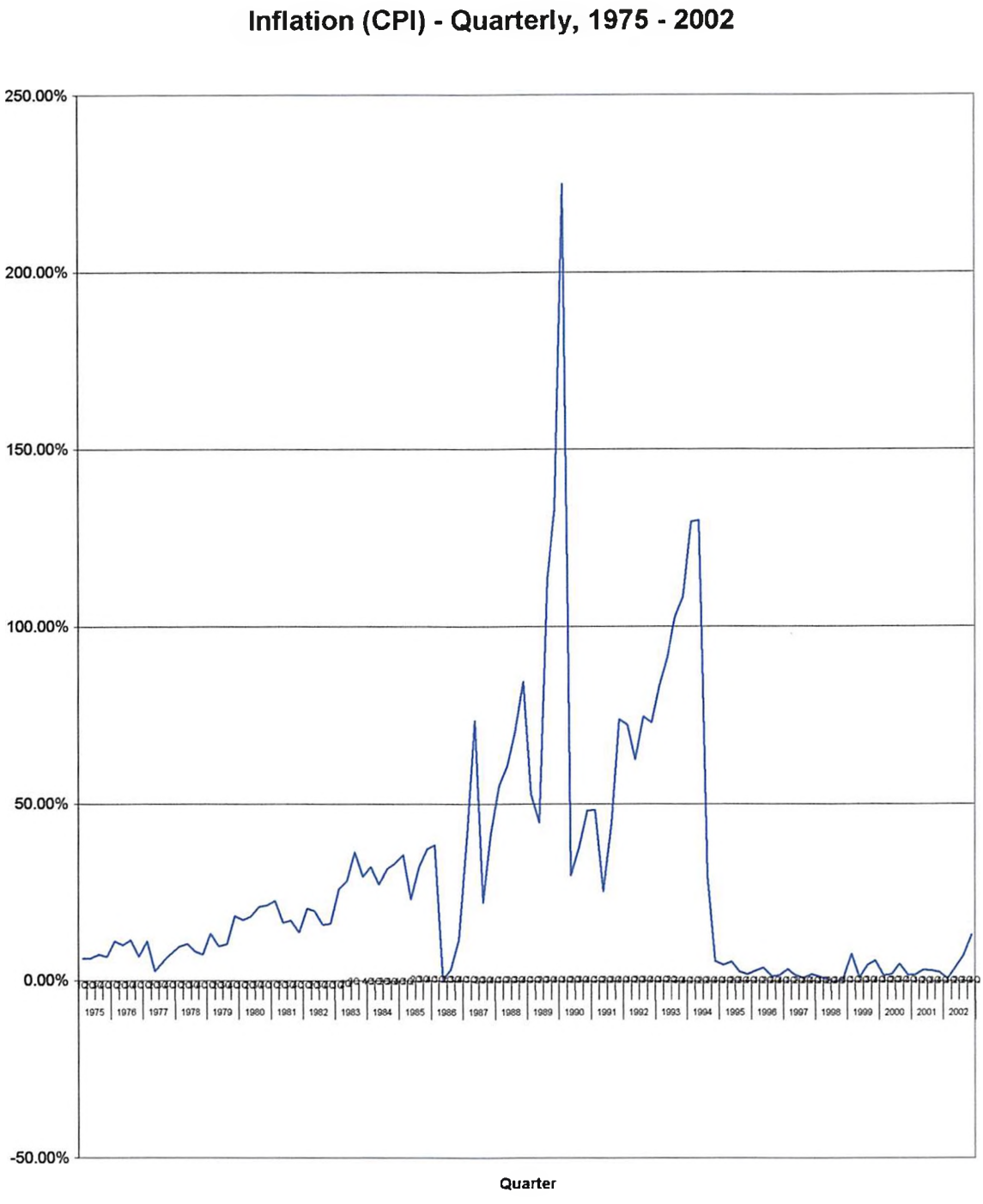

Inflation (CPI) - Quarterly, 1975 - 2002
250.00%
200.00%
150.00%
100.00%
50.00%
0.00%
-50.00%
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
Quarter

Table 5

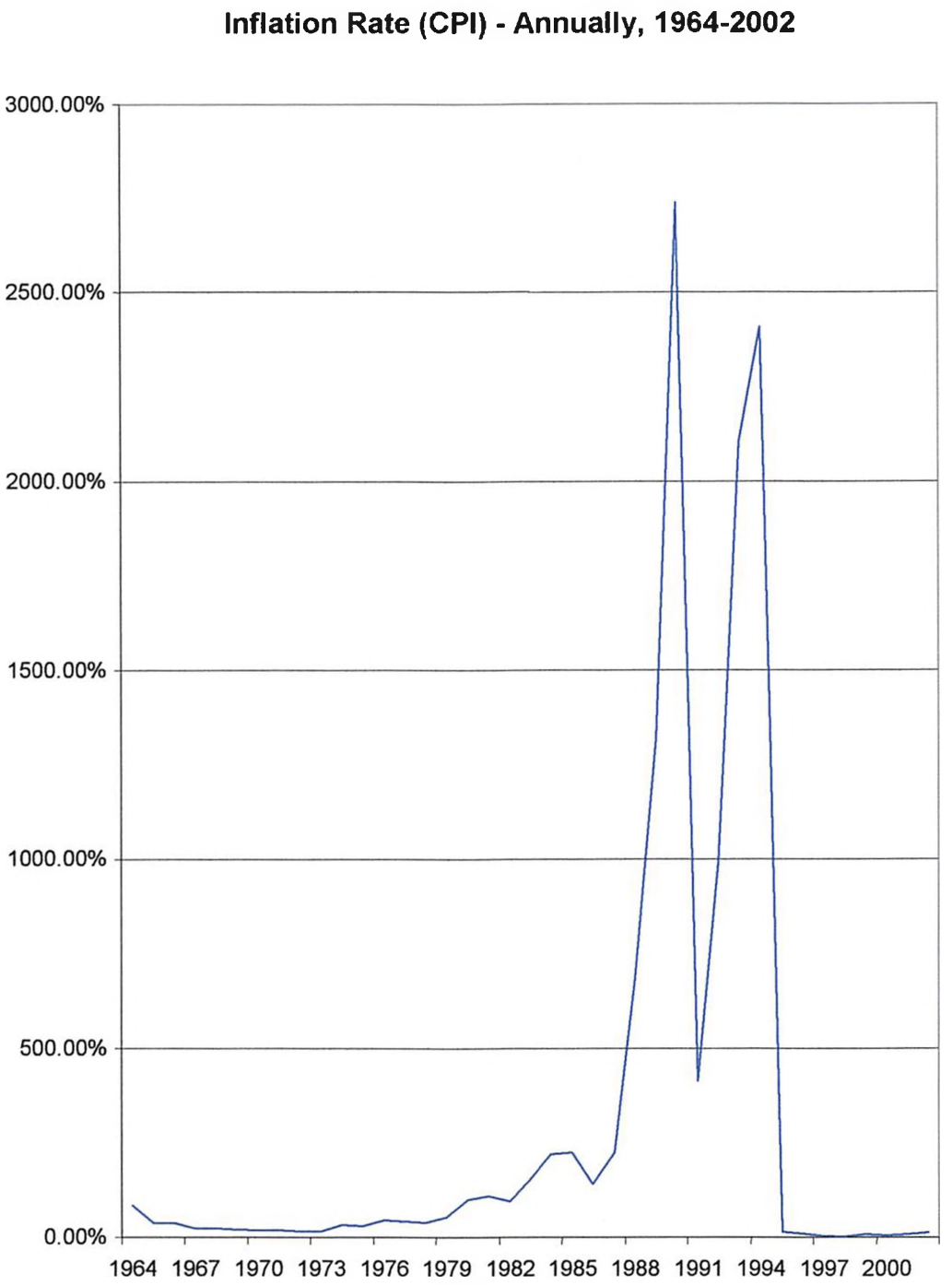
Annual Inflation Rate, 1964 – 2002
(in percent change in consumer price index)

Year	Inflation		Year	Inflation
1964	83.9%		1984	220.6%
1965	37.0%		1985	225.5%
1966	37.6%		1986	142.3%
1967	24.3%		1987	224.8%
1968	23.5%		1988	684.5%
1969	20.0%		1989	1,320.0%
1970	19.0%		1990	2,739.7%
1971	19.2%		1991	414.7%
1972	15.6%		1992	991.4%
1973	15.7%		1993	2,103.7%
1974	33.6%		1994	2,406.8%
1975	29.0%		1995	14.8%
1976	45.0%		1996	9.3%
1977	42.7%		1997	4.02%
1978	38.7%		1998	2.33%
1979	53.9%		1999	7.67%
1980	100.2%		2000	4.87%
1981	109.9%		2001	8.54%
1982	95.4%		2002	13.09%
1983	154.5%			

Sources:
Rates between 1964 and 1996 - Library of Congress Country Studies (Primary source: Fundacao Getulio Vargas (FGV), *Conjuntura Economica* [Rio de Janeiro], various issues.).

Rates between 1997 and 2002 – Instituto Brasileiro de Geografia e Estatistica (IBGE), *SIDRA*, online. These rates were adjusted to the previous years using the following mathematical expression:

Figure 8


Inflation Rate (CPI) - Annually, 1964-2002
3000.00%
2500.00%
2000.00%
1500.00%
1000.00%
500.00%
0.00%
1964 1967 1970 1973 1976 1979 1982 1985 1988 1991 1994 1997 2000

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September 10, 2003

Roberto Bento
167 Douglas C

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The results of an effort of the magnitude of your senior project deserve to be presented properly. **A rough draft is due in the Honors office the first week of November or April, depending on the semester in which you plan to graduate. When you prepare the final draft of your thesis or other documentation of your work, the following pages must be included:**

- **a title page according to the format included**
- **an approval page signed by your advisor**
- **an abstract of 100-200 words summarizing the thesis or documentation.**

It is important to remember that you will need to submit a copy of your thesis or documentation to the Honors Program to become part of our Independent Study Library. Also remember that **all nontraditional capstone projects must be accompanied by an academic paper. Graduation with either University Honors or Upper Division Honors will not be awarded unless your Capstone includes the required items listed above.** If you have any questions about your Capstone project, please don't hesitate to contact me.

Best wishes for a successful study.

Sincerely,

Michael J. Martin

Michael J. Martin, Ph.D.
Director

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enclosures

Northern Illinois University is an Equal Opportunity/Affirmative Action Institution.

REQUEST FOR UNIVERSITY HONORS INDEPENDENT STUDY LEADING TO THE COMPLETION OF THE HONORS CAPSTONE PROJECT

COVER SHEET

ROBERTO N. BENTO
Student Name

DOUGLAS C - 167
Local Address

RNBENTO@YAHOO.COM
E-Mail Address

DEKALB, IL 61115
City, Zip

ECON 498 H
Department and Course Number

753 - 3332
Student Phone Number

FALL 2003
Semester of Registration

09/05/03
Date of Request

MAY 2004
Graduation Date

University Honors Capstone Proposal

Proposed title / thesis: How The Relationship Between Inflation and Unemployment Affected Economic Growth in Brazil Between 1964 and 2003.

The focus of my Capstone research paper is to apply the Phillips Curve, which is an economic model that studies the relationship between inflation and unemployment, to data from Brazil. My objective is to get a better understanding of the Brazilian economy and its history. I am interested in this topic because I am from Brazil and will be, in a year, a recently graduated economist entering the Brazilian work force. My topic is important because it deals with monetary and fiscal policy and their effects on the growth of output. These issues are a great part of the economics field and, having a good understanding of them is imperative for my success as a future economist.

The following list consists of reference sources dealing with my topic:

Brazil: A Country Study. Library of Congress. 24 Aug. 2003 <http://lcweb2.loc.gov/frd/cs/brtoc.html>.

Domingues, Joelza Ester, and Layla Paranhos Leite Fiusa. Historia: O Brasil em Foco. Sao Paulo: FTD S/A, 1996.

Dubeux, Rafael. Historia da Republica do Brasil. 24 Aug. 2003 <http://elogica.br.inter.net/crdubeux/historia.html>.

Informacoes Historicas. Republica Federativa do Brasil. 24 Aug. 2003 <http://www.brasil.gov.br/informe.htm>.

Mankiw, N. Gregory. Principles of Economics. 2nd ed. New York: Harcourt, 1998.

Miller, Roger LeRoy, and David VanHoose. Macroeconomics: Theories, Policies and International Applications. 2nd ed. Cincinnati: South-Western, 2001.

Silva, Francisco de Assis. Historia do Brasil: Colonia, Imperio, Republica. Sao Paulo: Moderna, 1992.

Taylor, John b. Economics. 2nd ed. New York: Houghton Mifflin, 1998.

My research paper will be a quantitative study that will help me apply my knowledge of statistics and mathematics into the field of economics. I will use the MLA Guidelines as research style. My research design will consist of using the library, as well as the internet. I am using both primary and secondary sources in my database. The paper will be divided into seven parts:

1. A brief introduction of the paper ⇒ this will be the beginning of the paper and will preview the paper and my findings. This part will be done last in order to accurately outline the paper. Due date: November 23rd, 2003.
2. A synopsis of Brazil's economic history ⇒ this part will consist of a general view of Brazil's economic policy during the time period studied. Due date: September 7th, 2003
3. Explanation of the model ⇒ this part will describe the economic model I will use throughout the paper. Due date: September 21st, 2003.
4. Data set ⇒ this part will consist of tables of data that will be used in the paper. Due date: September 14th, 2003.

5. Application of the model ⇒ this part will consist of the application of the Model of Simple Regression Analysis to my data set. Due date: October 5th, 2003
6. Conclusion ⇒ this part will consist of the results of my application of the model to the data set. It will follow the end of the application of the model. Due date: October 19th, 2003.
7. Interpretation ⇒ this part will be my interpretation of the conclusion, in which I will apply my conclusion to Brazil's past and present economic experiences, giving an outlook into the future. Due date: November 9th, 2003.

This is a list of courses that provide me with a background for this study:

Econ 260	Math 229	Stat 350
Econ 261	Math 230	
Econ 330	Math 232	
Econ 360	Math 240	
Econ 361	Math 336	
Econ 385		
Econ 390 (currently enrolled)		

Signature Page

RA[illegible]
Student Signature

329-96-8145
Student Social Security Number

Request Approved:

Khan A. Mohabbat
Printed Name of Faculty Capstone Advisor

Khan A. Mohabbat
Signature

09/04/03
Date of Acceptance by Faculty Capstone Advisor

Carl Campbell
Printed Name of Department Chairperson

Carl Campbell
Signature

9/4/03
Date of Acceptance by Chairperson

University Honors Program Director

Signature

9/9/03
Date of Acceptance by Director